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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE work Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. **Application Number** 10/601.861 **TRANSMITTAL** Filing Date June 24, 2003 First Named Inventor **FORM** Kenneth Walter Locke Art Unit 1625 **Examiner Name** Taylor V. Oh (to be used for all correspondence after initial filing) Attorney Docket Number 215233 00400

Total Number of	Pages in This Submission	اه	<u> </u>	215233.	.00400		
ENCLOSURES (Check all that apply)							
Fee Transmittal Form Fee Attached  Amendment/Reply After Final Affidavits/declaration(s)  Extension of Time Request Express Abandonment Request Information Disclosure Statement  Certified Copy of Priority Document(s) Reply to Missing Parts/ Incomplete Application Reply to Missing Parts under 37 CFR 1.52 or 1.53			Drawing(s)  Licensing-related Papers  Petition Petition to Convert to a Provisional Application Power of Attorney, Revocation Change of Correspondence Address Terminal Disclaimer Request for Refund CD, Number of CD(s)  Landscape Table on CD  Remarks		After Allowance Communication to TC  Appeal Communication to Board of Appeals and Interferences  Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)  Proprietary Information  Status Letter  Other Enclosure(s) (please Identify below):  Declaration Under 37 C.F.R. §1.132 (for Kenneth W. Locke, executed September 20, 2005)		
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT							
Firm Name Katten Muchin Rosel		ehman Ll	hman LLP				
Signature / Willacorta							
Printed name Gilberto M. Villacorta, Ph.D.							
Date November 1, 2005					34,038		
CERTIFICATE OF TRANSMISSION/MAILING							
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This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

**PATENT** 



### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:

Kenneth W. Locke et al.

Examiner: Oh, Taylor V.

Serial No.:

10/601,861

Art Unit: 1625

Filed:

June 24, 2003

For: Process for making polymorphic form A of 4-[6-acetyl-3-[3-(4-acetyl-3-hydroxy-2-propylphenylthio)propoxy]-2-propylphenoxy]butyric acid

### **DECLARATION UNDER 37 C.F.R. §1.132**

Commissioner for Patents Washington, DC 20231

Sir:

- I, Kenneth W. Locke, Ph.D., hereby make the following declaration:
- 1. I received a Ph.D. degree in Pharmacology from the Emory University School of Medicine in the year 1985.
- 2. I have 20 years of experience in the pharmaceutical industry focused primarily on drug discovery and the preclinical and early clinical development of novel therapeutics. Each of the positions described below has provided me with the skills, experience and insight to identify promising drug candidates. My career in the pharmaceutical industry began at Hoechst-Roussel Pharmaceuticals, Inc.,

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heading laboratories for analgesics and anti-inflammatory, and later Alzheimer's disease, drug research. In 1989, I joined Interneuron Pharmaceuticals, Inc., as Manager, Behavioral Neuroscience, taking on positions of increasing responsibility over the next 11 years. Before leaving Interneuron, as Executive Director, Preclinical Development, I was responsible for all aspects of preclinical development for the company's drug portfolio, as well as for in-licensing candidate evaluation. In 2000, I joined Tanabe Research Laboratories U.S.A., Inc., as Vice President of Research, to coordinate the research efforts of chemists and biologists in identifying novel drug development candidates. I am currently employed by MediciNova, Inc., the assignee of the above-referenced patent application, with offices located at 4350 La Jolla Village Drive - Suite 950, San Diego, CA 92122.

- 3. I am named as a co-inventor of the invention claimed in the above-referenced patent application. I have read the contents of the Final Office Action mailed May 19, 2005. I have also been apprised of the Examiner's request, made to assignee's counsel on August 30, 2005, to provide this declaration directed to the superior solubility properties of the claimed orthorhombic crystals of 4-[6-acetyl-3-[3-(4-acetyl-3-hydroxy-2-propylphenylthio)propoxy]-2-propylphenoxy]butyric acid (also referred to in the specification of the above-referenced patent application as Form A), as well as the results of certain experiments that are described in Appendix A, attached hereto.
- 4. As described in the specification of the above-referenced patent application, for example, at page 9, Example 4, the claimed method provides orthorhombic crystals (Form A) that exhibit physical characteristics which are

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different from those displayed by undesired monoclinic crystals. For instance, the desired orthorhombic crystals displayed greater and unexpected solubility compared with the undesired monoclinic crystals of Form B. For example, at 30 °C the solubility of Form B was calculated to be 6.1 g/L, while that of Form A was calculated to be 15.7 g/L – that is, at 30 °C, the claimed orthorhombic crystals displayed more than twice the solubility of the undesired monoclinic crystals. This physical characteristic of greater solubility is also observed at 22 °C and at 40 °C.

- 5. I would also like to draw the Examiner's attention to Figures 6 and 7 of Appendix A, attached hereto. These figures depict powder x-ray diffraction (PXRD) analyses of tablets made from the claimed orthorhombic crystals and the undesired monoclinic crystals, respectively. As can be readily seen from these figures, the crystalline structure of the two forms, Form A and Form B, are retained in the manufacture of the respective tablets. It is therefore reasonable to assume that the greater solubility characteristics of the claimed orthorhombic crystals are retained in the tablets, which in turn would offer a benefit of greater solubility/bioavailability of active drug to a patient.<sup>1</sup>
- 6. Other aspects of the Appendix A, which are noteworthy, are Figures 2 and 5. Figure 2 depicts the PXRD analyses for the claimed orthorhombic crystals (Form A) versus undesired monoclinic crystals (Form B or Form C). Note, for example, the three singlet peaks for Form A between about 11.5 and 16.0 (2-Theta scale), whereas Forms B and C (both monoclinic) exhibit three doublet peaks in the same region. Figure 5 depicts differential scanning calorimetry (DSC) thermograms

Dissolution experiments using tablets made from different polymorphic forms of 4-[6-acetyl-3-[3-(4-acetyl-3-hydroxy-2-propylphenylthio)propoxy]-2-propylphenoxy]butyric acid were inconclusive because tablets were manufactured with widely different particle sizes for the two polymorphic forms. The particle size used for the manufacture of a tablet

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of Forms A versus B (including tablets made from the two forms). As can be seen from Figure 5, the phase transition for Form A crystals occurs at a lower temperature than Form B crystals. It may be inferred from these results that Form B is the thermodynamically favored crystal structure for this compound.

- 7. In summary, the claimed method provides orthorhombic crystals which have been shown to exhibit distinct physical and chemical characteristics from the undesired monoclinic forms, including a greater solubility relative to undesired monoclinic crystals.
- 8. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity or enforceability of any patent maturing from the above-referenced patent application.

Dated: 9/20/25

3y: \_\_\_\_\_\_

Kenneth W. Locke, PH.D.

Doc #:WAS01 (215233-00400) 41614988v1:09/20/2005/Time:10:22

# A Study of Different Polymorphic Forms of a New Drug Substance, MN-001

Frank Fang<sup>1,2</sup>, Kenneth W. Locke<sup>1</sup>, David Roe<sup>2</sup>, Srebi Petrov<sup>2</sup>, Geoff Carr<sup>1</sup>, Charles Chen<sup>1</sup> Patheon, Inc., <sup>2</sup>To whom correspondence should be addressed (Email: <u>frank.làng@patheon.com)</u> <sup>2</sup>MediciNova, Inc., <sup>2</sup>Torcan Chemical Ltd, <sup>2</sup>University of Toronto.

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Serren DXON Differenceses System Optenting at SAV1758A. A high power, line from Cu-Ke-Sonne was used Serren DXON Differenceses System Optenting at SAV1758A. A high power, line from Cu-Ke-Sonne was used contained with a roll and Keet General General. The optended data were tokened as nay and LS Systems.

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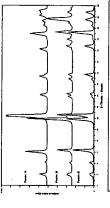
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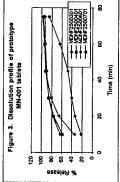
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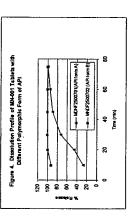
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### Figure 2 PXRD of Three Main Polymorphic Forms of MOV-001 API





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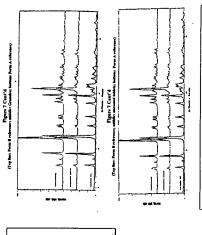


Figure 6 PXBD of MIN-001 Form A API and mbroquest tablets lett MIN-01751701

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Figure 7 PXRD of MN-601 Form B API, granule and tablets less MDAT 25601702 (Top Bar: Peru B reference) and the API, belt ARSSet between Form A reference)

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